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INCIPIENT INFLAMMATIONS OF THE EAR IN EARLY LIFE,

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It is the object of this paper to present to you a few suggestions for the purpose of stimulating a more general interest in the primary aural inflammations that must necessarily first come under the care of the general physician. The prevention of diseases of the ear and the subsequent deafness, rather than the frequently futile efforts to relieve conditions that could and should have been prevented, must be the aim of all true physicians. The evident lack of interest and information concerning diseases of the ear doubtless arises in great part from the fact that until recently this subject has received little or no recognition from our medical colleges. Furthermore, the demands of an active practice will allow the busy physician but little time to devote to the study of otology, and therefore he has frequently

* Read before the Pennsylvania State Medical Society, May 16, 1894.

felt impelled to use palliative measures when more radical treatment was demanded.

It has been estimated that from eighteen to twenty-two per cent. of school children are unable to write dictations correctly when the teacher speaks in a high tone of voice at a distance of twenty to twenty-five feet. If these deductions are even approximately correct, it reveals an increasing and alarming affliction among our young population, to which neither our profession nor the public have given due and serious consideration. Now, as the great majority of ear diseases (excepting traumatism) have their incipiency in infancy and early childhood, and, as the practitioner of general medicine is always, and very properly, the first to be consulted in all that pertains to the health and physical care of his patient, he must, therefore, to a great extent be morally responsible for the proper management of these incipient ear troubles and for the prevention of the possible serious sequelæ.

He who would not promptly care for and protect the *eyes* of the newborn infant would indeed be regarded as very remiss and negligent in the performance of his professional duties. If this be true in regard to the eyes, why should not the health of the *ears* be of equal importance? Within the past three years it has fallen to my lot to see six infants die from disease of the middle ear, and, unfortunately, in every case the trouble had not been recognized until within a few hours of their death. Four of these patients were thought to have been suffering from "brain fever" and two from "meningitis." We should not hastily conclude that a child is "born with a temper" simply because its youthful being is disposed to resent suffering, and so resorts to crying as its only means of expression. When a child frets and cries persistently, and the cause can not be otherwise located, an examination of the ears will fre-

quently reveal the difficulty and suggest prompt means of relief.

In years past the belief prevailed that there was something mysterious, or at least most intricate, connected with morbid conditions of the ear and their treatment. While this curious impression is still somewhat in vogue, it is nevertheless gratifying to note the gradual disappearance of the gross ignorance and empiricism that divided all diseases of the ear into two great classes, "wax and no wax," "wax curable and wax incurable." Likewise, the charlatan, whose prosperity is usually notable but brief, has been compelled to seek other fields of operation, where he can astonish another credulous community with some startling wonder.

During intra-uterine life there is an accumulation of a semifluid substance within the tympanic cavity known as Wharton's jelly. At about the time of birth this fluid is usually absorbed through the physiological changes that take place in the tympanum, and by means of which air is admitted into the middle-ear cavity immediately following the first cry of the infant. The external auditory meatus is sometimes obstructed by the "cheesy varnish" (vernix caseosa) covering the surface of the fœtus. The presence of this material may cause inflammation of both the drumhead and the meatus itself. We are at times confronted with the statement that "the child was born with a discharging ear." This, however, is not likely to be the fact, for such a discharge in all probability has been caused by the presence of some unabsorbed Wharton's jelly acting as an irritant and exciting a suppurative inflammation of the tympanic cavity. It is well, therefore, to examine the external auditory canal of the newborn child, and if it be free from accumulated material and the membrana tympani is found to be congested, the tympanic cavity should be inflated by Politzer's method. If, however, this fails to re-

lieve the symptoms, the drumhead should be carefully punctured and inflation again used, when the relief will be almost immediate.

The treatment of so-called "earache," when due to an inflammation in a previously healthy middle ear, becomes an important matter, not only for the purpose of giving relief from the suffering that is at times most intense, but an urgent interest in such cases is especially required from the fact that their prompt and proper treatment is frequently of vital importance to the patient. It is now generally accepted that brain and mastoid complications result from the acute suppurative inflammation of the middle ear, as well as from the chronic form. Having had the misfortune to see a considerable number of these serious complications, the writer must express the belief that they are in many cases preventable, and therefore we must consider it the imperative duty of every practitioner of medicine to be able to promptly recognize and immediately care for an acute suppurative inflammation (abscess) of the tympanic cavity.

It is necessary that we should recognize two forms of acute inflammation of the middle ear, the one caused by exposure to dampness, sea-bathing, the careless use of the nasal douche, dental irritation from decayed teeth or during dentition, or through continuity we may have an extension of some existing catarrhal condition of the throat or nasopharynx; the other form is that which occurs during the course of one of the infectious fevers, and is usually purulent in character. The post-nasal space will always bear inspection, especially if the child is a mouth-breather. However, from whatever cause the acute inflammation may arise, the inflammatory product will undergo fatty degeneration, unless the Eustachian tube is sufficiently patulous to drain the middle-ear cavity, or unless the fluid finds

egress through an opening made by puncturing the drum-head.

The treatment of an acute inflammation of the tympanic cavity will largely depend on the extent and severity of the attack. If the patient receives treatment during the stage of hyperæmia and consequent hypersecretion of the mucous lining of the Eustachian tube, tympanum, and mastoid cells, the inflammation will have been arrested and confined to the sero mucous or catarrhal stage. If, however, this early care has not been given, the case will progress to the stage of suppuration and subsequent rupture of the membrana tympani. As soon as pain of any character is complained of, bloodletting in front of the tragus is of the first importance. This may be accomplished by applying three to six Swedish leeches, or by the use of the artificial leech * devised by Dr. Gorham Bacon, of New York. There are some advantages in the use of the artificial leech as a means of extracting blood. The difficulty of using the natural leech is overcome in many cases, and especially in children; bleeding from the natural leech is much more difficult to arrest; its bite is painful, and may give rise to an erysipelatous inflammation; natural leeches are not always to be had and are expensive, whereas the artificial leech is always ready for use and inexpensive. In very young children, or in any case where bloodletting is not advisable, a blister in front of the tragus will answer the same purpose, unless the case is a severe one. Inflation of the tympanic cavity is an important part of the treatment in the majority of cases. This is readily accomplished in children by attaching a piece of soft rubber tubing to a Politzer's air bag and inserting this into the nostril; the spasmodic crying of the child naturally prevents

* This artificial leech can be obtained from the W. F. Ford Surgical Instrument Company, of New York.

the air from entering the throat, and it is thus gently forced through the tube into the middle ear. A continuous stream of a mild carbolic-acid or boric-acid solution —properly heated—should be carefully directed into the external meatus; the bowels must be thoroughly opened and the patient kept quiet. The mastoid is usually somewhat involved, but when promptly treated by running hot or cold water through a Leiter coil, bloodletting or blistering, the slight inflammation will quickly subside.

When this treatment fails to relieve the symptoms, it is safe to assume that an abscess of the tympanic cavity is forming, and no time should be lost in puncturing the drumhead at the most dependent point. It is not well in all cases to wait until there is bulging of the drumhead, as this will not occur in every case, and there is danger of spontaneous rupture if we delay too long. When there is discharge it is best treated by inflating the cavity twice per week and the daily injection of a warm solution composed of sodii biborat., ʒ j; acid. boric., ʒ ij; alcoholis, f ʒ iij; aq. dest., q. s. ad f ℥ viij.

Von Tröltsch has wisely observed: "The moral and intellectual future of a child stands in direct relation to the functional activity of the ear." This forcibly emphasizes the necessity of good hearing power as a prerequisite to the proper development of the intellectual faculties. How very common it is to have parents and teachers declare children dull in intellect, stupid, absent-minded, and lazy, for one or all of which severe punishment may be inflicted, when the real cause of their apparent stupidity is their inability to hear correctly! A few years ago a boy, nine years of age, came under the writer's notice. His parents informed me that he had "always been stupid, due to a defective intellect," and, following the advice of friends, they had subjected him to several methods of "mental

training," including some punishment, but that his condition continued to grow worse, and they now regarded him as "going into a hopeless state of idiocy." I regret to say that this gloomy prognosis was also the opinion of their medical adviser. An examination revealed some post-nasal adenoid vegetations which entirely occluded the Eustachian tubes and post-nasal space. The irritation of these growths induced an inflammation of the tubes, which extended into the middle ear and thereby caused a purulent discharge which had persisted ever since. Such an exhibition of careless indifference on the part of a physician is unpardonable. Moreover, it is difficult to explain why many of these patients do not die from a brain or mastoid complication long before they receive intelligent care. The treatment required in this case was simply the removal of the adenoid growths, the use of an antiseptic wash in the external meatus, and inflation of the cavity by Politzer's method. The case recovered completely and permanently in less than two months, some slight impairment of hearing alone remaining.

The importance of these inflammations of the ear has a renewed and increasing interest when we consider the multitude of deaf-mutes that are directly traceable to a discharging ear as a consequence of one of the exanthemata. Contrary to general belief, deaf-mutism is not a distinct disease in itself, any more than pain or a rise of temperature could be regarded as an entirely separate ailment. Very properly, therefore, deaf-mutism must be accepted as a symptom or, still better, as a sequela of an existing disease. Moreover, as the organs of phonation and articulation are perfectly normal in deaf-mutes, their inability to speak is usually the result of deafness. Deaf-mutes, however, can be taught to speak and enter into conversation by what is known as the German system of

instruction. From the foregoing it will be seen that the loss of speech in this class of cases is almost invariably due to deafness, and that deafness is always the result of either a diseased condition of the ear after birth, or, as is frequently the case, a congenital defect, such as an arrest of development of the internal ear. When the deafness is caused by a congenital arrest of development, there is no probability of the case ever being improved; but when the deafness and subsequent loss of speech have been acquired after birth, such an affliction can frequently be remedied when promptly recognized and treated.

What a sad experience it is to have the parents of an otherwise healthy child apply for treatment with the hope of having both hearing and speech restored, when neither can be improved! The history of these patients is usually that the child had never been ill, that it could talk, and was bright and cheerful until two years of age or older, at which time it contracted one of the so-called children's diseases. An extension of this disease, which always affects the throat, developed an "earache" and abscess in the middle ear. This, however, was regarded as a natural, even a necessary consequence, and of little importance; therefore this grave complication was neglected, and, as frequently occurs, terminated in increasing deafness. In a short time the family noticed the child growing progressively less talkative, but were satisfied with the explanation that it was due "to its increasing backwardness and changed disposition." However, as its articulation became more and more indistinct, other advice was obtained, which developed the fact that the child was quite deaf, and to all practical purposes dumb.

It is sometimes difficult to determine the degree of deafness in early life. It is well, therefore, to caution the

parents not to be deceived or to indulge the vain hope that because a child can repeat the words "papa" and "mamma," or other words of few syllables, it can really hear, for these are acquired by merely watching the movements of the lips. Again, it must be remembered that deaf-mutes are strangely susceptible to vibrations, and will for this reason have their attention called to and promptly turn in the direction of one entering the room, shutting a door, or when the atmosphere is disturbed by an effort to attract attention to some noise. Dalby has shown that a child of four or five years of age who has been brought up in India with a native nurse and taught as a first language Hindustanee, will have completely forgotten it in six months if it is brought to England and does not hear this language spoken. As Bonnafont has well said: "The mind of the deaf remains in a perpetual sleep. The blind man is a stranger in the physical world, and the deaf man is a stranger in the moral world. The deaf will overcome natural difficulties more easily than the blind. But in relation to moral difficulties the blind will play a better part than the deaf. The one, like Alexander, will cut the Gordian knot; the other will vanquish the sphinx and solve the riddle."

We are all familiar with a large number of blind people who have distinguished themselves in science, art, and literature, but we are able to record only one congenital deaf-mute, J. F. Berthier, of Paris, who has gained any prominence for his literary attainments. It is, indeed, not without cause that the deaf are more sad, morose, and cheerless than the blind. All that is glorious and beautiful in the external world is hidden from the blind man; but the deaf are deprived of that still greater charm, the enjoyment of social life with their fellow-men. It is a pleasure to see the bright, intellectual and happy expression that crowns

the blind man's countenance when he enters into conversation, for he then forgets his defect; whereas the deaf, under similar circumstances, are only reminded of their infirmity, and really feel downcast when any one addresses them.

Out of fifty-one deaf-mutes that have consulted the writer in the past few months, thirty-seven acquired their affliction, while the remaining fourteen were congenital. Of the acquired ones twenty-one resulted from scarlet fever, nine from diphtheria, five from measles, and four from traumatism. Nine were between the ages of one and two years, sixteen between two and three years, and twelve between three and five years. I think it is safe to assert that most of these acquired cases would have been prevented if the pus in the tympanum had been promptly evacuated at the opportune moment, followed by mild antiseptic irrigation of the external auditory canal, inflation of the tympanic cavity, bloodletting, and proper care of the throat. When this line of treatment is properly carried out, an acute abscess, from whatever cause, will in most cases promptly recover. The relief from suffering is almost immediate, the discharge will have been arrested in a few days, and the hearing is usually restored in two or three weeks.

On the other hand, if this simple but highly important care is not taken, the pain increases in proportion to the distention of the membrana tympani by the progressive accumulation of pus in the tympanum, until finally the pressure becomes so great that the tension of the drum is overtaxed, and with a report quite audible to the patient it ruptures, a copious flow of pus follows, and the suffering is relieved. By this time, however, great damage has been done both to the membrana tympani and tympanic cavity. Instead of the opening in the drumhead quickly repairing, as

it will do when incised, its lacerated edges are much slower to mend. The injury done to the delicate mucous lining of the tympanic cavity gives rise to a discharge that becomes more or less chronic, and this in turn is conducive to one or more of the many serious complications that too frequently follow such a condition. Should this discharge continue for any great length of time, caries and necrosis of the ossicles, with destruction of the membrana tympani, and later the walls of the tympanic cavity, are almost sure to occur. Knowing that the bony walls of the tympanum are always thin; that the roof in some cases is entirely absent; that the carotid canal, through which passes the carotid artery, forms the anterior wall of the tympanic cavity; that the jugular fossa, in which lies the bulb of the jugular vein, constitutes the floor of the tympanum; and that the middle and back part of the temporo-sphenoidal lobe and the outer and front part of the lateral lobe of the cerebellum are in direct contact with the middle ear, it is indeed surprising that even a slight necrosis of this organ is not productive of more fatal results. It is from these neglected cases of either an acute or chronic suppurative inflammation of the middle ear that we have deafness and deaf-mutism, caries and necrosis, abscess of the brain and mastoid, diffuse meningitis, osteo-phlebitis, thrombosis of the lateral sinus, pyæmia, and infectious inflammation of the liver and other internal organs.

Therefore, gentlemen, when all this suffering and future affliction can be prevented by prompt and judicious treatment in the incipient stages, we must protest against the neglect and indifference that are so manifest in a large number of these cases. Notwithstanding the fact that these unfortunate complications usually arise from the chronic form of discharge, it must nevertheless be borne in mind that if the initial lesion is promptly and properly treated

the disease will be quickly eradicated in the majority of cases, thus not only preventing the discharge from becoming chronic but often aborting the inflammation in its incipiency, and so preventing its progress to the stage of suppuration.

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FRANK P. FOSTER, M.D.

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